Federal Student Aid (FSA)

FP Data Mart – Release 2

Development Signoff

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Executive Summary

This document describes the approach for developing the components of the FP Data Mart – Release 2.

1. Development will be based upon the Requirements and the Design documents.

2. The Informatica processes and Microstrategy reports will be developed and unit tested in the development environment.

3. Personnel supporting the source system applications will develop extracts from their systems.

4. Some data in lookup/dimension tables and "historical" tables will be populated from spreadsheets.

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1   Introduction

1.1   Purpose and Scope

This document describes the approach used to develop the FP Data Mart – Release 2 application. It captures the approach and results from the development effort and summarizes the developed, tested, and accepted solution including objects in the Informatica and Microstrategy repositories and programs/queries to extract data from the source systems.

FP Data Mart – Release 2 was developed within the same environment as Release 1. Some of the reports from Release 2 are based upon data from Release 1. The remaining Release 2 reports are based upon data being loaded as part of Release 2 (from NSLDS, PEPS, and FMS).

The project team used the business and technical components of the requirements and design to develop high-quality, maintainable software for the source system extracts, the Informatica mappings, and the Microstrategy reports. This involved developing the mappings and reports, and then reviewing the reports to verify correctness. The developer(s) also executed unit/assembly tests to check interdependencies between the extracts from the source systems, the Informatica processes, and Microstrategy reports in the FP Data Mart development environment.

Prior to developing the reports in Microstrategy, each report was assigned to either a developer or the power user group. The Modernization Partner Microstrategy resources were responsible for developing up to 12 reports based upon the design, as well as the 18 detail reports that support the Lender Scorecard. The Microstrategy-trained FP Channel users (known as 'power users') were responsible for completing the remaining reports. The reports were assigned based upon their priority and complexity with the highest priority and highest complexity reports assigned to the Modernization Partner. Prior to development, the project team decided that the implementation of Release 2 would not be dependent upon the power users completing their reports. The power users would complete their reports as quickly as possible given their other commitments.

2   Development Approach

This section identifies the approach the project used to develop the application. There are 5 areas of development: programming extracts from the source systems, loading of lookup/dimension table data, loading of other 'historic' tables, coding the mappings within Informatica, and developing the reports within Microstrategy.   Throughout the development effort, weekly meetings were conducted to address any questions or clarifications related to the development effort.

2.1   Source Systems

The project team worked with the personnel who currently maintain the source system applications. These personnel were involved either in the requirements gathering sessions or in subsequent meetings where the requirements for their specific system were discussed. Follow-on meetings and conference calls were conducted to ensure that the source system personnel understood the requirements.

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Based upon the requirements, the source system personnel developed the modules to provide the FP Data Mart with the necessary data. To assist with the technical communication between the different systems, Interface Control Documents (ICDs) were produced that identified each file and the expected record layout.

2.1.1   FMS

Much of the data requested from FMS existed in tables specific to Guaranty Agencies or LEAP/SLEAP participants. The Data Mart team requested all of the data from these tables and the Data Mart team took responsibility to discard the records that it had previously processed.

For tables that were not specific to Guaranty Agencies or LEAP/SLEAP participants, the FMS team created new tables containing the specific fields that were requested. They then executed queries against the main FMS tables and inserted records into the new tables.

Using database linking, the FMS team executed queries that populated the data mart tables from the data within the FMS tables or the newly created tables. The Informatica mappings then processed against these tables.

In support of the production environment, the FMS personnel began converting the queries into programs based upon their programming standards. The results of these programs will be compared to the results produced using the queries. A final test will be executed to make sure that the database linking works properly with the FMS programs.

2.1.2   PEPS

Much of the data requested from PEPS existed in tables specific to Guaranty Agencies/Lenders. The Data Mart team requested all of the data from these tables and the Data Mart team took responsibility to discard the records that it had previously processed. The PEPS personnel executed queries against the PEPS data and placed the data in text files. The text files where then transferred to the SUN computer so the Informatica mappings could process against them.

Once the text files were produced, the EAI team worked with the PEPS technical personnel and the Informatica developer to transfer the files to the SUN computer using the EAI "bus".

The PEPS personnel will place these queries into their production environment following their standards.

2.1.3   NSLDS

Much of the data requested from NSLDS existed in many tables, and complex joins were required to extract the data. To assist in testing the Informatica mappings and the Microstrategy reports, the NSLDS personnel developed QMF queries to provide test data. The resulting text files were transferred to the SUN computer so the Informatica mappings could process against them.

Once the queries were produced and the NSLDS personnel understood the requirements, they began developing programs that would be used to support the production environment. According to their

standards, the NSLDS personnel required coded programs to be developed instead of supporting SQL queries in the production environment. NSLDS programmers would use the results of the queries to verify the results of their programs. The file layouts created by the programs would be identical to the file layouts created from the queries.

Once sample text files were produced, the EAI team worked with the NSLDS technical personnel and the Informatica developer to transfer the files to the SUN computer using the EAI "bus".

2.2 Lookup/Dimension Table Loads

Many lookup/dimension tables are used within the data mart. Some of these existed as a result of Release 1. Others were created and loaded as a result of Release 2. The data to load into these tables was extracted from the source systems. The data in these tables was loaded directly from Excel spreadsheets or text files as indicated in the Design document.

2.3 "Historic" Table Loads

It was necessary to pre-populate some of the fact tables with 'historic' data. One example is the Guaranty Agencies who are participating in the Voluntary Participation Agreement (VFA) program. They began participating in the program before there was a method for them to enter their information into FMS. This data was contained on Excel spreadsheets. The data from the spreadsheets was loaded into the same tables in which the ongoing VFA data will be loaded.

2.4 Informatica Mappings

The Informatica developer used the Source to Target Mapping document from the Design Document to develop the mappings. When questions arose, the Informatica developer discussed the issues with others on the development team to make sure that the mappings would support the Microstrategy reports.

When actual test data was available from the source systems, these files were used. When test data was not available, the developer created data based upon the file layouts contained within the Interface Control Documents (ICDs). Specific test scripts were not developed for unit testing the mappings as it is relatively straightforward to determine whether or not the input data was loaded into the target tables. The real test of the Informatica mappings is executing the Microstrategy reports and verifying the data on the reports. (Refer to the FP Data Mart – Release 2 Testing Approach document for information regarding unit testing.)

2.5 Microstrategy Reports

The Microstrategy developers used the Requirements document and the Source to Target Mapping document to create the objects within the Microstrategy repository. Once the required filters, metrics, attributes, prompts, etc. were created, the developers then created the report itself. When questions arose, the Microstrategy developers discussed the issues with others on the development team and the subject matter experts to make sure that the Microstrategy reports were developed correctly.

Specific test scripts were not developed for unit testing the reports as it is relatively straightforward to determine whether or not the data on a report is correct. The Microstrategy developers executed queries against the data in the data mart and compared the results of the queries with the data that

appeared on the actual Microstrategy reports. (Refer to the FP Data Mart – Release 2 Testing Approach document for information regarding unit testing.)

3   Development Results

This section summarizes the results of the development efforts. As a result of the development efforts, several changes/clarifications were applied to the Requirements document and to the Source to Target Mapping document. These changes were tracked through an appropriate change control process.

3.1   Source Systems

3.1.1   FMS

The FMS data received via the queries and the database linking provided the correct data. The database linking approach will continue to be used in the production environment.

3.1.2   PEPS

The PEPS data received via the queries and the file transfer provided the correct data.

3.1.3   NSLDS

The NSLDS data received via the queries provided the correct data. The FP Data Mart will need to keep in contact with the NSLDS team and retest when the extract programs are available.

3.2   Lookup/Dimension Table Loads

The data for these tables was loaded. Refer to Section 5.1 Lookup/Dimension Table Loads for the list of these tables.

3.3   "Historic" Table Loads

The data for these tables was loaded. Refer to Section 5.2 "Historic" Table Loads for the list of these tables.

3.4   Informatica Mappings

All of the Informatica mappings were created and unit tested. The results of the mapping executions included additions to some lookup tables. These rows received a 'decode' of 'unknown'. The 'unknown' codes were also written to the LKP_NEW_VALUES table. Refer to Section 5.3 Fact Table Loads and Section 5.4 Informatica Mappings for the list of mappings that were created.

3.5   Microstrategy Reports

All 12 Microstrategy reports for which the Modernization Partner was responsible, as well as the 18 detail reports that support the Lender Scorecard, were coded and unit tested. Three of the 17 reports for which the Power Users were responsible were coded and unit tested at this time. The data on the reports was verified by executing queries against the underlying database tables. Refer to Section 5.5 Microstrategy Reports for the list of reports.

4 Assumptions, Issues, and Action Items

4.1 Assumptions

This document assumed the following for the development effort. If any of these assumptions prove to be false, changes will result to the testing approach, the project schedule, or both.

1. The source system personnel working with the FP Data Mart team will continue to support the FP Data Mart project efforts.

2. The source system personnel will be responsible for developing, unit testing, and system testing their programs/jobs supporting the FP Data Mart on the timeline required by the FP Data Mart project.

3. The source system personnel will be responsible for migrating the programs/jobs supporting the data mart into their production environment. This effort will be coordinated with the FP Data Mart project lead.

4. The personnel from the EAI team will work with personnel from PEPS and NSLDS to automatically transfer files from the source system to the SUN box for processing by Informatica.

4.2 Issues

1. The development of the programs from NSLDS will not meet the current system/user acceptance timeline. The impact will either be to delay the entire implementation of the data mart or to deploy in 2 phases – the non-NSLDS items and then the NSLDS items. A final decision will be required prior to completion of the testing phase. The project will closely monitor the progress of the NSLDS extracts. The project team will need time to test the reports with the production extracts prior to loading the extracted data into production.

4.3 Action Items

1. Continue to monitor progress by the source system personnel and the EAI team (FP Data Mart Technical Lead)

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5 Appendices

5.1 Lookup/Dimension Table Loads

During the development effort, some new Lookup/Dimension tables were identified and others were either combined or determined to be no longer required. The following new Lookup/Dimension tables were used in Release 2 development:

New Lookup/Dimension Tables
LKP_AUDIT_ENGMNT_TYPE
LKP_AUDIT_FINDING
LKP_AUDIT_MTHD
LKP_AUDIT_REGION
LKP_CLM_REASON_NSLDS
LKP_DFCNCY
LKP_DFCNCY_STATUS
LKP_EXTRACT_DATE_FISCAL_MONTH
LKP_FISCAL_MONTH
LKP_FISCAL_QTR_DATE
LKP_FM2000_ANNL
LKP_FM2000_ANNL_LINE_ITEM
LKP_FM2000_MNTHQTR_LINE_ITEM
LKP_FM2000_MNTH_LINE_ITEM
LKP_GA_VFA_LINE_ITEM
LKP_GA_VFA_RPT_FREQ
LKP_HOLIDAYS
LKP_INVOICE_ITEM_SOURCE
LKP_LEAP_SLEAP_INST_TYPE
LKP_LNDR_DOCUMENT_TYPE
LKP_LNDR_PRTFL_LVL
LKP_LNDR_SCORECARD_DTL
LKP_LNDR_SCORECARD_ITEM
LKP_LOAN_STATUS
LKP_NEW_VALUES
LKP_OBLIGTN_TYPE
LKP_PAY_MTHD
LKP_PD_AMT_TYPE
LKP_RVW_SCOPE
LKP_SCH
LKP_SCH_BRNCH
LKP_SCH_BRNCH_STATUS
LKP_SOURCE_SYSTEM
LKP_SRVCR
LKP_STATE_AGENCY
LKP_SYSTEM_DISCLAIMER

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The following Lookup/Dimension tables from Release 1 were also used in Release 2 development:

Release 1 Lookup/Dimension Tables	
D_CALENDAR_DATE	
D_CALENDAR_MONTH	
D_CALENDAR_QTR	
D_CALENDAR_YEAR	
D_FISCAL_QTR	
D_FY	
D_GA	
D_GA_ADDRESSES	
D_GA_CITIES	
D_GA_STATES	
D_LNDRS	
D_LNDR_ADDRESSES	
D_LNDR_CITIES	
D_LNDR_LOAN_STATUS	
D_LNDR_STATES	
D_LOAN_TYPE	

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5.2 "Historic" Table Loads

"Historic" Table Loads	
Data	**Tables Affected**
Spreadsheets containing manually processed VFA weekly and fee reports	F_VFA_RPT
Spreadsheets containing manually calculated VFA performance indicators for FY2000 and FY2001	F_VFA_PERF_RPT

5.3 Fact Table Loads

During the development effort, some new Fact tables were identified and others were either combined or determined to be no longer required.   The following list of Fact tables were used in development.

Fact Table Loads
F_CLM_PD
F_FFEL_LOAN
F_FM2000_ANNL
F_FM2000_MNTH
F_FM2000_MNTH_SUM
F_FM2000_MNTH_QTR
F_LEAP_SLEAP_ANNL
F_LEAP_SLEAP_AWRD
F_LEAP_SLEAP_SUM
F_LNDR_DFLT_RATES
F_LNDR_AUDIT
F_LNDR_AUDIT_DFCNCY
F_LNDR_RVW
F_LNDR_RVW_DFCNCY
F_LNDR_RVW_SCOPE
F_LNDR_SCORECARD
F_LNDR_SCORECARD_PRTFL
F_VFA_PERF_RPT
F_VFA_RPT
F_GA_INVOICES

5.4   Informatica Mappings

Informatica Mappings			
Mapping Name	**Table Name**	**Built/Unit Tested By**	**Reviewed By Mod Partner**
m_Load_F_CLM_PD	F_CLM_PD	C. Patel	T. Liu
m_Load_F_FFEL_LOAN	F_FFEL_LOAN	C. Patel	T. Liu
m_Load_F_FM2000_ANNL	F_FM2000_ANNL	C. Patel	T. Liu
m_Load_F_FM2000_MNTH	F_FM2000_MNTH	C. Patel	T. Liu
m_Load_F_FM2000_MNTH	F_FM2000_MNTH_SUM	C. Patel	T. Liu
m_Load_F_FM2000_MNTH_QTR	F_FM2000_MNTH_QTR	C. Patel	T. Liu
m_Load_F_LEAP_SLEAP_ANNL	F_LEAP_SLEAP_ANNL	C. Patel	T. Liu
m_Load_F_LEAP_SLEAP_APP	F_LEAP_SLEAP_APP	C. Patel	T. Liu
m_Load_F_LEAP_SLEAP_AWRD	F_LEAP_SLEAP_AWRD	C. Patel	T. Liu
m_Load_F_LEAP_SLEAP_SUM	F_LEAP_SLEAP_SUM	C. Patel	T. Liu
m_Load_F_LNDR_DFLT_RATES	F_LNDR_DFLT_RATES	C. Patel	T. Liu
m_Load_F_LNDR_AUDIT	F_LNDR_AUDIT	C. Patel	T. Liu
m_Load_F_LNDR_AUDIT_DFCNCY	F_LNDR_AUDIT_DFCNCY	C. Patel	T. Liu
m_Load_F_LNDR_RVW	F_LNDR_RVW	C. Patel	T. Liu
m_Load_F_LNDR_RVW_DFCNCY	F_LNDR_RVW_DFCNCY	C. Patel	T. Liu
m_Load_F_LNDR_RVW_SCOPE	F_LNDR_RVW_SCOPE	C. Patel	T. Liu
m_Load_F_LNDR_SCORECARD	F_LNDR_SCORECARD	C. Patel	T. Liu
m_Load_F_LNDR_SCORECARD_PRTFL	F_LNDR_SCORECARD_PRTFL	C. Patel	T. Liu
m_Load_F_VFA_PERF_RPT_FMS	F_VFA_PERF_RPT	C. Patel	T. Liu
m_Load_F_VFA_PERF_RPT_NSLDS	F_VFA_PERF_RPT	C. Patel	T. Liu
m_Load_F_VFA_RPT	F_VFA_RPT	C. Patel	T. Liu
m_Load_F_VFA_RPT_WKLY	F_VFA_RPT	C. Patel	T. Liu
m_Load_F_GA_INVOICES	F_GA_INVOICES	C. Patel	T. Liu
m_Load_LKP_AUDIT_ENGMNT_TYPE	LKP_AUDIT_ENGMNT_TYPE	C. Patel	T. Liu
m_Load_LKP_FM2000_ANNL	LKP_FM2000_ANNL	C. Patel	T. Liu
m_Load_LKP_FROM_F_LNDR_AUDIT_DFCNCY	LKP_DFCNCY_STATUS	C. Patel	T. Liu
m_Load_LKP_FROM_F_LNDR_AUDIT_DFCNCY	LKP_PD_AMT_TYPE	C. Patel	T. Liu
m_Load_LKP_FROM_F_LNDR_RVW_DFCNCY	LKP_DFCNCY_STATUS	C. Patel	T. Liu
m_Load_LKP_FROM_F_LNDR_RVW_DFCNCY	LKP_PD_AMT_TYPE	C. Patel	T. Liu
m_Load_LKP_SCH_BRNCH	LKP_SCH_BRNCH	C. Patel	T. Liu
Database Link to FMS database	SR_FFELGA_ANNUAL_REPORTS	C. Patel	D. Pan
Database Link to FMS database	SR_FFELGA_MONQUART_REPORTS	C. Patel	D. Pan
Database Link to FMS database	SR_FFELGA_MONTHLY_REPORTS	C. Patel	D. Pan
Database Link to FMS database	SR_FFELGA_SOA_REPORTS	C. Patel	D. Pan
Database Link to FMS database	SR_FFELVFA_FEE_REPORTS	C. Patel	D. Pan
Database Link to FMS database	SR_FFELVFA_WEEKLY_REPORTS	C. Patel	D. Pan
Database Link to FMS database	SR_F_GA_INVOICES	C. Patel	D. Pan
Database Link to FMS database	SR_LEAPP_PERFORMANCE_REPOR	C. Patel	D. Pan

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Database Link to FMS database	SR_LEAP_ALLOTMENT	C. Patel	D. Pan
Database Link to FMS database	SR_LEAP_APPROPRIATION	C. Patel	T. Liu

5.5   Microstrategy Reports

5.5.1   Modernization Partner Reports

Mod Partner Reports		
Report Name	**Built/Unit Tested By**	**Reviewed By Mod Partner**
GA VFA Performance Measures	T.Liu	A. Usmani
GA VFA Fees	T.Liu	A. Usmani
GA Fee Payments	T.Liu	A. Usmani
Lender Portfolio Percentage by GA	T.Liu	L. Phillips
GA Requested and Paid Fees	T.Liu	A. Usmani
GA Fee Payments History	T.Liu	A. Usmani
GA Delinquency Aging	T.Liu	A. Usmani
GA Closed School and False Certification Claims	T.Liu	A. Usmani
GA Subrogated Loan Candidates	T.Liu	A. Usmani
School Change in Loan Status	T.Liu	A. Usmani
FMS-NSLDS Cross-Check	T.Liu	T. Liu
Lender Portfolio Characteristics	M. Mandrella	A. Usmani
Lender Default Claim Rate	M. Mandrella	A. Usmani
Lender Change in Default Claim Rate	M. Mandrella	A. Usmani
Lender Delinquency Rate	M. Mandrella	A. Usmani
Lender Change in Delinquency Rate	M. Mandrella	A. Usmani
Lender Origination Fee Variance	M. Mandrella	L. Phillips
Lender Interest Adjustments	M. Mandrella	A. Usmani
Lender Cohort Default Rate	M. Mandrella	T. Liu
Lender Change in Loan Status	M. Mandrella	A. Usmani
Lender Purchases	M. Mandrella	A. Usmani
Lender Sales	M. Mandrella	A. Usmani
Lender Capitalized Interest	M. Mandrella	A. Usmani
Lender Voids	M. Mandrella	L. Phillips
Lender Program Review Results	M. Mandrella	L. Phillips
Lender Audit Results	M. Mandrella	L. Phillips
Lender ED 799 Late	T. Liu	A. Usmani
Lender ED 799 Missing	M. Mandrella	A. Usmani
Lender Scorecard Analysis	M. Mandrella and T.Liu	A. Usmani
Lender Scorecard	T. Liu	A. Usmani

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5.5.2 Power User Reports

Power User Reports		
Report Name	**Built/Unit Tested By**	**Reviewed By Mod Partner**
GA Federal Fund	Power Users	T. Liu
GA Operating Fund	Power Users	T. Liu
GA Restricted Account	Power Users	T. Liu
GA Monthly	Not complete	
GA Monthly/Quarterly	Not complete	
GA Annual	Not developed	
GA VFA Weekly	Not developed	
GA Annual Trigger Rate	Not developed	
GA Monthly Trigger Rate Trend	Not developed	
GA Net Receivable	Not developed	
Top 10 / 2% Lenders by GA	Not developed	
GA Market Share by State	Not developed	
GA Monthly Summary	Not developed	
GA Annual Comparative	Not developed	
Lender Servicer Portfolio	Not developed	
LEAP/SLEAP National Summary	Not developed	
LEAP/SLEAP Actual Award	Not developed	